

California Environmental Protection Agency



**Air Resources Board**

**PROPOSED AB 118 AIR QUALITY IMPROVEMENT PROGRAM  
FUNDING PLAN FOR FISCAL YEAR 2011-12**

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## Executive Summary

The Air Quality Improvement Program (AQIP) is a voluntary incentive program created under the *California Alternative and Renewable Fuel, Vehicle Technology, Clean Air, and Carbon Reduction Act of 2007* (Assembly Bill (AB) 118, Statutes of 2007). AQIP provides funding through 2015 for clean vehicle and equipment projects which reduce criteria pollutant and air toxics emissions often with concurrent climate change benefits.

AQIP expands the Air Resources Board's (ARB or Board) portfolio of air quality incentives, providing the opportunity to fund projects not covered under its other incentive programs which focus on near-term emission reductions. AQIP is ARB's only incentive program structured to enable investments in technology advancing projects which also provide immediate emission reductions.

AQIP investments to date support the deployment of hybrid trucks, zero-emission passenger cars, and other advanced technologies critical to meeting California's long-term air quality and climate change goals. These investments are an important first step in the fundamental transformation of the California vehicle fleet to one with widespread use of zero- and near-zero emission vehicles. ARB staff proposes continuing these investments in the 2011 funding cycle. AQIP projects are working as envisioned, and their streamlined design has made them accessible to consumers. Staff is proposing several refinements aimed at making ARB's limited funding go further and encouraging broader program participation.

The Governor's proposed Fiscal Year (FY) 2011-12 State Budget provides \$40 million for AQIP projects. ARB's regulatory guidelines governing implementation of AQIP require that the Board approve an annual Funding Plan describing how AQIP funds will be spent each fiscal year. The *Proposed AB 118 Air Quality Improvement Program Funding Plan for Fiscal Year 2011-12* (FY 2011-12 Funding Plan) outlines: (1) ARB priorities for the funding cycle; (2) funding allocations by project category; (3) project category descriptions, including refinements based on public input and evaluation of previous years' project implementation; and (4) contingency provisions to address uncertainties in available funding levels.

### Summary of FY 2011-12 Funding Proposal

For the FY 2011-12 funding cycle, ARB staff proposes to focus most of AQIP funding on the two largest project categories from previous years – the Hybrid Truck and Bus Voucher Incentive Project (HVIP) which targets commercial vehicle applications and the Clean Vehicle Rebate Project (CVRP) which provides consumer rebates for zero-emission and plug-in hybrid passenger cars. Demand for funding has been strong in these projects, and both hybrid truck and electric vehicle technologies are at a key point where public incentives can help them penetrate the California marketplace and become mainstream choices. In developing AQIP, ARB staff envisioned that these project categories would receive funding for multiple years. Staff also proposes to continue a small allocation for advanced technology demonstrations. These are an

important part of AQIP because successful demonstration projects can potentially lead to new deployment project opportunities.

Table ES-1 presents ARB staff's proposed FY 2011-12 project category allocations along with the estimated number of vehicles that these funding levels would support. The table shows two separate funding targets. The \$40 million target reflects the funding level for AQIP projects in the Governor's proposed State Budget. The \$28 million target is a conservative estimate of total funding based on AQIP revenues over the past two years which have been 25-30 percent lower than the appropriated amount. To manage the uncertainty regarding available funding, ARB staff proposes to initially issue solicitations for the lower funding targets shown in Table ES-1 with provisions to scale up funding if revenues are higher. The contingency provisions to address revenue uncertainty are described in greater detail in the Funding Plan.

**Table ES-1: Proposed FY 2011-12 Project Category Funding Targets**

Project Category	\$28 Million Plan based on recent revenues		\$40 Million Plan proposed Budget appropriation	
	Proposed Allocation	Vehicles Funded	Proposed Allocation	Vehicles Funded
Clean Vehicle Rebates (CVRP)	\$15 M	5,600	\$21 M	7,800
Hybrid Truck & Bus Vouchers (HVIP)	\$11 M	500	\$16 M	700
Advanced Technology Demonstration/Testing	\$2 M	N/A	\$3 M	N/A

ARB staff proposes tripling the funding for CVRP relative to last year's \$5 million allocation in anticipation of a substantial increase in the number of zero-emission vehicles (ZEVs) and plug-in hybrid passenger cars being offered for sale in California over the next year. This is a key phase in the California ZEV rollout as vehicle sales are projected to transition from the hundreds to thousands over the next year. Staff also proposes cutting per vehicle rebate amounts in half to increase the number of available rebates in an effort to meet projected demand.

The \$11 million proposed for HVIP would provide funding for about 500 new hybrid trucks and buses which staff believes will adequately support the continuing deployment of hybrid technology into the California fleet. Several refinements to HVIP voucher amounts are proposed with a goal of encouraging additional fleets to purchase hybrid and ZEVs. Staff also proposes a \$2 million allocation to continue funding for advanced technology demonstrations.

#### Recommendation

Staff recommends the Board approve the proposed FY 2011-12 Funding Plan which builds on the success of the first two years of AQIP.

## I. Introduction

The Air Quality Improvement Program (AQIP) is a voluntary incentive program created under the *California Alternative and Renewable Fuel, Vehicle Technology, Clean Air, and Carbon Reduction Act of 2007* (Assembly Bill (AB) 118, Statutes of 2007). AQIP provides funding for clean vehicle and equipment projects which reduce criteria pollutant and air toxics emissions often with concurrent climate change benefits. AQIP expands the Air Resources Board's (ARB or Board) portfolio of air quality incentives, providing the opportunity to fund projects not covered under its other incentive programs which focus on near-term emission reductions.

AQIP is ARB's only incentive program structured to allow for investments in technology advancing projects which also provide immediate emission reductions, and ARB has chosen to use AQIP funds for this purpose. AQIP investments to date support the deployment of hybrid-electric vehicles, zero-emission vehicles (ZEV), and other advanced technologies critical to meeting California's post-2020 air quality and climate change goals.

The Governor's proposed Fiscal Year (FY) 2011-12 State Budget provides \$40 million for AQIP projects. ARB's regulatory guidelines governing implementation of AQIP require that the Board approve an annual Funding Plan describing how AQIP funds will be spent each fiscal year prior to spending ARB's annual appropriation. The *Proposed AB 118 Air Quality Improvement Program Funding Plan for Fiscal Year 2011-12* (FY 2011-12 Funding Plan) outlines: (1) ARB priorities for the funding cycle; (2) funding allocations by project category; (3) project category descriptions, including refinements based on public input and evaluation of previous years' project implementation; and (4) contingency provisions to address uncertainties in available funding levels.

The remainder of this introductory chapter provides background on AQIP. The next chapter contains a summary of the FY 2011-12 funding proposal, descriptions of the project categories and contingency provisions. For more background on AQIP, please refer to the *2010 Biennial Report to the Legislature on the AB 118 Air Quality Improvement Program* available at [http://www.arb.ca.gov/msprog/aqip/leg\\_reports.htm](http://www.arb.ca.gov/msprog/aqip/leg_reports.htm).

### A. Implementation of AQIP

#### Program Purpose

AQIP provides funding through 2015 for clean vehicle and equipment projects, subject to annual appropriations by the Legislature. Funding for AQIP is provided by Department of Motor Vehicle fees. As with other ARB incentive programs, statute requires that emission benefits from AQIP be surplus to what is already required by local, state and federal regulation. The AB 118 statute allows for a range of eligible AQIP project categories, which can be divided into three general project types:

- Commercial Deployment. These projects include the next generation of advanced technology vehicles and equipment just reaching commercialization.

Consumer incentives are needed because these products generally cost more than their traditionally powered (e.g., gas or diesel) counterparts, which can be a significant deterrent to their purchase. Incentives will accelerate consumer acceptance and have the immediate benefit of reducing criteria pollutants, air toxics, and greenhouse gas emissions. Incentives help drive economies of scale by reducing production and sales costs as volume increases, and accelerating technology transfer to other sectors. Most AQIP funding awarded to date has been directed to commercial deployment projects.

- *Advanced Technology Demonstration:* ARB's goal in funding demonstration projects is to help demonstrate the viability of new, cleaner technology. AQIP funds are used to accelerate advanced technology vehicles, equipment or emission controls which are on the cusp of commercialization. The demonstration projects funded now could become deployment projects several years from now if the technology proves successful. ARB has included a small allocation for advanced technology demonstration projects in each AQIP Funding Plan.
- *Research and Workforce Training:* Statute allows AQIP to fund research on the air quality impacts of alternative fuels, research to increase biofuel production, and workforce training related to advanced technologies. These project types provide the information and training necessary to develop the advanced fuels and vehicles most effective in reducing air pollution. To date, ARB has not directed AQIP funding to research and workforce training categories because there are already large investments being made by other agencies. For example, the California Energy Commission (Energy Commission) has already directed \$16 million to advanced technology work force training projects through its AB 118 program and is considering an additional \$6.5 million investment in the upcoming funding cycle. Accordingly, ARB staff again proposes deferring AQIP funding for these project categories.

#### Guiding Principles for AQIP

The Board established overarching implementation priorities and guiding principles for AQIP funds as part of the FY 2009-10 Funding Plan and reaffirmed the guiding principles in the FY 2010-11 Funding Plan. Staff believes these guiding principles continue to be appropriate and used them to identify projects for this funding year. Broad principles include:

- Supporting development and deployment of advanced technologies needed to meet California's longer-term, post 2020 State Implementation Plan (SIP) and climate change goals.
- Focusing program funds on areas underserved through other incentive programs.



The Federal Clean Air Act includes a provision that allows SIPs for areas with the worst air quality (the extreme ozone nonattainment areas – the South Coast and San Joaquin Valley) to rely on advanced, yet to be developed, technologies (also known as the “black box” commitment). Investing now in the next generation of vehicles, equipment, and emission controls is essential if California hopes to meet this commitment because of the time needed for significant fleet turnover.

Meeting the 2050 greenhouse gas emission reduction goal will require a fundamental transformation of the vehicle fleet, with zero-emission and hybrid vehicles making up a significant fraction of the fleet. Specifically, the 2007 *State Alternative Fuels Plan* envisions a 2050 vehicle fleet where 40 percent of California’s transportation fuel is electricity or hydrogen. AQIP investments are an important early step in this transformation.

For deployment projects, guiding principles also include:

- Accelerating deployment of proven advanced technologies to support significant penetration by the 2024 extreme ozone nonattainment area attainment date (i.e., focusing on new, commercialized technologies on the cusp of widespread deployment).
- Modifying consumer choice to buy cleaner vehicles, which may not have occurred without a monetary incentive.

Demonstration project guiding principles focus on projects that:

- Demonstrate the potential to provide cost-effective emission reductions.
- Show the potential to be economically viable without subsidy.
- Will be ready for commercialization within three years following demonstration.
- Have potential for use in the California marketplace.

## **B. Program Benefits**

California’s air quality challenges require the development and widespread deployment of zero- and near-zero-emission technologies, and ARB’s goal for AQIP is to spur widespread use of these technologies. Accordingly, AQIP has a different focus than the Carl Moyer Program and the Goods Movement Emission Reduction Program, whose main objectives are near-term emission reductions with the ancillary benefit of technology advancement. Through these programs, about \$2 billion is already being invested in near-term emission reductions. By comparison, AQIP is a modest down payment on the advanced technologies needed to meet California’s long-term air quality goals.

AQIP projects provide both immediate emission reductions from the vehicles directly funded and, more importantly, set the stage for greater, indirect reductions in the future by accelerating large-scale penetration of these advanced technologies. These longer-term program benefits accrue from:

- Reducing production costs through economies of scale so the technologies become more cost-competitive and self-sustaining in the future.
- Accelerating technology transfer to other sectors, such as promoting the transfer of zero-emission and hybrid technologies from on-road vehicles to off-road equipment and marine vessels.
- Promoting consumer acceptance so that advanced technologies become mainstream consumer choices.

AQIP investments in advanced technologies also help position the State for green job growth over the next decade. Some of the vehicles or vehicle components funded under AQIP are manufactured in California, and these vehicles and equipment are distributed through extensive local dealership networks.

### **C. Coordination with the California Energy Commission**

The Energy Commission receives about \$100 million annually under AB 118 to fund alternative and renewable fuel and vehicle technology projects to reduce greenhouse gas emissions. There is overlap between the vehicle projects that can be funded in each program because many advanced technologies achieve both greenhouse gas and criteria pollutant reductions. For example, AB 118 statute lists hybrid and zero-emission technologies as eligible categories in both programs. ARB and the Energy Commission staff are closely coordinating on implementing AB 118 programs to ensure their respective investments complement one another.

AB 118 statute does not authorize ARB to fund vehicle fueling infrastructure through AQIP. That authority resides with the Energy Commission in its AB 118 program. The Energy Commission's investments in vehicle charging and fueling infrastructure complement ARB's incentives for clean vehicle deployment. These investments are important in ensuring a successful California ZEV rollout. Staff from both agencies coordinate to match fueling infrastructure needs with advanced vehicle deployment projections.

The Energy Commission has also taken a lead in funding workforce training. It has already directed \$16 million to workforce training projects and is considering an additional \$6.5 million investment in the FY 2011-12 funding cycle. ARB is working closely with the Energy Commission to ensure that these training investments support the technologies ARB is funding through AQIP.

ARB and the Energy Commission are jointly funding projects for categories where demand exceeds each agency's available funds. Such pooling of resources is much more efficient than each agency independently providing funding for the same types of projects. In February 2011, the Energy Commission directed \$2 million of its AB 118 funding to ARB's Clean Vehicle Rebate Project (CVRP) to help meet the expected demand for ZEV rebates through the middle of the year. In May 2011, the Energy Commission also directed \$4 million to ARB's Hybrid Truck and Bus Voucher Incentive Program (HVIP) to provide increased incentives for zero-emission truck purchases. The Energy Commission staff has proposed including provisions in its draft FY 2011-12 Investment Plan that would allow it to again direct clean vehicle funding to ARB if demand warrants. ARB staff plans to write its AQIP grant solicitations and grant awards with the flexibility to receive any additional Energy Commission funding that may be directed to AQIP.

#### **D. Coordination with Other Local, State, and Federal Incentive Programs**

ARB is implementing AQIP in a coordinated manner with other local, state, and federal air quality programs. Staff has tried to design AQIP projects with as much flexibility as possible to allow AQIP funds to be combined with other incentives that may become available. For example, AQIP vouchers for the purchase of a new hybrid school bus can be combined with Lower Emission School Bus Program funding. In addition, ARB encourages local air districts to coordinate their funding with AQIP if they are interested. To date, two local air districts – the South Coast Air Quality Management District (AQMD) and Sacramento Metropolitan AQMD – have made investments in hybrid voucher programs following the hybrid voucher model established in AQIP. These local investments further leverage the State's investment and will bring additional clean vehicles to California.

As new opportunities unfold, staff will evaluate ways to leverage AQIP funds – either as a match to obtain federal funds to augment California's air quality programs or through opportunities to fold other local, state, or federal funding into AQIP.

#### **E. Status of Air Quality Loan Program for Trucks**

The FY 2008-09 State Budget included a one-time appropriation from AQIP fund to implement a heavy-duty vehicle air quality loan program to assist smaller truck fleets affected by ARB's In-Use Truck and Bus Regulation and the Heavy-Duty Vehicle Greenhouse Gas Emission Reduction Regulation. Under this appropriation, \$35 million is available for a financial assistance program referred to as Providing Loan Assistance for California Equipment (PLACE). Since the program started in 2009, ARB has successfully implemented two distinct but complementary loan program components to provide affordable financing to eligible small business owners for the purchase of cleaner trucks, exhaust retrofits, and SmartWay technologies that improve vehicle aerodynamics to reduce greenhouse gas emissions.

The first program component is a loan guarantee program developed in partnership with the California Pollution Control Financing Authority (CPCFA) within the State Treasurer's Office. Launched in April 2009, this component builds on CPCFA's highly successful California Capital Access Program (CalCAP), which provides a stable financing structure enabling lenders to provide competitive-rate loans to small businesses that fall just outside of conventional underwriting standards. Demand for this component increased substantially in early 2010 as a result of statutory changes expanding lender eligibility to include lenders such as truck manufacturers' financing divisions. In the second program component, ARB successfully demonstrated a pilot revolving loan/lease-to-own program administered by Cascade Sierra Solutions, a non-profit organization dedicated to saving fuel and reducing emissions from heavy-duty diesel vehicles. The pilot launched in 2009, and all funds were spent within a year. As of May 31, 2011, approximately \$7 million in PLACE funds has been leveraged to provide over \$45 million in financing for the purchase of 694 cleaner trucks and 331 exhaust retrofits.

In an effort to provide more financing options for truckers, ARB is augmenting PLACE by redirecting some of the loan guarantee funding to a new, direct loan program that will begin offering affordable financing to eligible borrowers later this summer. While sharing the same goals and targeting the same credit-challenged borrowers as the other PLACE components, this program differs in that ARB sets interest rates and other loan terms instead of commercial financial institutions. This program structure, implemented with the assistance of a contractor, expands ARB's ability to meet the financing needs of truck owners and may be used to sustain the loan fund thereby increasing ARB's ability to financially aid truckers.

ARB staff expects that the funding allocated to date will meet projected demand over the next year, so staff does not propose additional funding for PLACE in the proposed FY 2011-12 Funding Plan. Staff will reevaluate the need for additional funding in next year's Funding Plan.

#### **F. Status of Previous Years' AQIP Projects**

In the previous two funding cycles (FY 2009-10 and FY 2010-11), the Board approved Funding Plans based on the approximately \$40 million appropriated for AQIP projects in each year's State Budget. However, available funding is dependent upon actual revenues in the Air Quality Improvement Fund which is funded by motor vehicle fees. In both years, revenues were about 25-30 percent lower than the appropriated amount. As a result, ARB had to scale back project funding in accordance to the contingency provisions in each year's Funding Plan. ARB awarded about \$29 million in AQIP projects each year as shown in Table I-1, which lists the project categories, funding levels, and project status. In FY 2010-11, the Energy Commission supplemented ARB's awards by directing an additional \$6 million to AQIP projects to meet additional demand bringing the total project funding to \$35 million for the year.

ARB funded five project categories in the first year of AQIP – the largest two being vouchers for the purchase of hybrid trucks and buses through HVIP, and rebates for zero-emission or plug-in hybrid passenger cars through CVRP. Both hybrid truck and electric vehicle technologies are at a key point where public incentives can help them become mainstream choices. These AQIP investments are an important first step in the fundamental transformation of the California fleet to one with widespread use of hybrid trucks and ZEVs critical to meeting California's long-term air quality and climate change goals.

For the most part, ARB continued funding these same categories in the second year, with the addition of one new category, a pilot project to evaluate and deploy off-road hybrid equipment. ARB did not allocate additional funds to the agricultural utility terrain vehicle rebate project in FY 2010-11 because existing funds were sufficient to meet the projected demand. While at different points in expenditure and implementation, all projects with the exception of the agricultural utility terrain vehicle rebate project are working as envisioned, and the streamlined nature of the projects has enabled funds to be spent in a timely manner. In the case of the zero-emission agricultural utility terrain vehicles, the demand ARB staff anticipated has not materialized despite mid-course refinements to increase rebate levels.

**Table I-1: Status of FY 2009-10 and 2010-11 AQIP Projects**

<b>Project Category</b>	<b>FY09-10 Award</b>	<b>FY10-11 Award</b>	<b>Project Status<sup>1</sup></b>
Hybrid Truck & Bus Vouchers (HVIP)	\$20.4 M	\$23 M <sup>2</sup>	Launched Feb 2010. ~\$23 M spent; implementation ongoing.
Clean Vehicle Rebates (CVRP)	\$4.1 M	\$7 M <sup>3</sup>	Launched March 2010. ~\$8 M spent; implementation ongoing.
Lawn & Garden Equipment Replacement	\$1.6 M	\$1 M	Launched spring 2010; 9 air districts running programs. ~\$2.4 M spent; implementation ongoing.
Zero Emission Agricultural Utility Terrain Vehicle Rebates	\$1.1 M	--	Launched April 2010. ~\$140,000 spent; implementation ongoing.
Off-Road Hybrid Equipment Pilot	--	\$2 M	Grantee selected June 2011; project kickoff July 2011
Advanced Technology Demonstrations	\$1.85 M	\$1.9 M	1 <sup>st</sup> year funds awarded spring 2010; 4 projects ongoing. 2 <sup>nd</sup> year funds awarded June 2011; 7 projects kickoff July 2011
<b>Total Funding</b>	<b>\$29M</b>	<b>\$35M</b>	

<sup>1</sup> Status as of May 31, 2011. Funds spent reflects vouchers/rebates in process and redeemed and administrative costs.

<sup>2</sup> Includes \$4 million in funding from the California Energy Commission for zero-emission trucks.

<sup>3</sup> Includes \$2 million in funding from the California Energy Commission.

## II. Proposed Funding Plan for FY 2011-2012

For the FY 2011-12 funding cycle, ARB staff proposes to focus most of AQIP funding on the two largest project categories from previous years – HVIP and CVRP. There has been strong demand for funding in these areas, and both hybrid truck and electric vehicle technologies are at a key point where public incentives can help them penetrate the California marketplace and become mainstream choices. Staff also proposes to continue a small allocation for advanced technology demonstrations. These are an important part of the program because successful demonstration projects can potentially lead to new deployment project opportunities in the future.

ARB staff envisioned that these project categories would be funded for multiple years in order to maintain continuity and provide a larger overall impact on the selected technologies. Continuing investments in the next generation of vehicles, equipment, and emission controls is critical to meeting California's long-term air quality goals and will help start the transformation of the California fleet to one with widespread use of advanced technology hybrid and ZEVs.

ARB staff held four public workshops and three more detailed public work group meetings in developing the proposed Funding Plan. ARB staff also coordinated with the Energy Commission. As in previous years, ARB staff will hold additional public work group meetings through the year to update stakeholders on project implementation.

### A. Summary of Funding Proposal

Table II-1 presents ARB staff's proposed FY 2011-12 project category allocations along with the estimated number of vehicles that these funding levels would support. The table shows two separate funding targets. The \$40 million target reflects the funding level for AQIP projects in the Governor's proposed budget. The \$28 million target is a conservative estimate of total funding based on AQIP revenues over the past two years, which have been 25-30 percent lower than the appropriated amount. To manage the uncertainty regarding the funding that will ultimately be available for AQIP projects, ARB staff proposes to initially issue solicitations for the lower funding targets shown in Table II-1 with provisions to scale up funding if revenues are higher.

**Table II-1: Proposed FY 2011-12 Project Category Funding Targets**

Project Category	\$28 Million Plan based on recent revenues		\$40 Million Plan proposed Budget appropriation	
	Proposed Allocation	Vehicles Funded	Proposed Allocation	Vehicles Funded
Clean Vehicle Rebates (CVRP)	\$15 M	5,600	\$21 M	7,800
Hybrid Truck & Bus Vouchers (HVIP)	\$11 M	500	\$16 M	700
Advanced Technology Demonstration/Testing	\$2 M	N/A	\$3 M	N/A

ARB staff proposes tripling the funding for CVRP relative to last year's \$5 million allocation in anticipation of a substantial increase in the number of ZEVs and plug-in hybrid passenger cars being offered for sale in California over the next year. This is a key phase in the California ZEV rollout as vehicle sales are projected to transition from the hundreds to thousands over the next year. Correspondingly, staff is proposing to scale back the HVIP allocation from \$19 million last year to \$11 million, providing funding for about 500 new hybrid trucks and buses which staff believes will adequately support the continuing deployment of hybrid technology into the California fleet. Staff also proposes a \$2 million allocation to continue funding for advanced technology demonstrations.

#### **B. Description of Project Categories Proposed FY 2011-12 Funding**

This section describes each project category proposed for funding in FY 2011-12. Each of the categories is a continuation of project funding in previous years, so an update on the current status of each project is also provided.

## Clean Vehicle Rebate Project (CVRP)



**Funding Target:** \$15 million

**Synopsis:** Consumer rebates for zero-emission and plug-in hybrid light-duty vehicles.

**Project Benefits:**

- Support transportation sector emission reductions needed in the post-2020 timeframe.
- Spur commercialization of the cleanest vehicles available.

### Funding Level

ARB staff proposes a \$15 million initial funding target for CVRP. This target assumes total AQIP project funding of \$28 million, a conservative estimate based on AQIP revenues over the past two years. If revenues are higher than this minimum level, CVRP funding would be scaled up to a maximum amount of \$21 million as outlined in the contingency provisions section.

### Overview

CVRP is designed to accelerate widespread commercialization of ZEVs and plug-in hybrid electric vehicles by providing consumer rebates to partially offset the higher cost of these advanced technologies. Zero- and near-zero emission vehicles are a key element of California's strategy for meeting health based air quality standards and climate change goals. The vehicle fleet will need to be fundamentally transformed to meet California's 2050 greenhouse gas emission reduction goal, with zero-emission and hybrid vehicles making up a significant fraction of the light-duty fleet.

The State's early investment in zero-emission and plug-in hybrid technologies will prime the market for the larger number of vehicles needed over the next decade and beyond to meet these ambitious targets as well as ensure the success of ARB's ZEV regulation. The Board envisioned the need for consumer rebates in the early years of the ZEV rollout because consumer acceptance is a critical early step towards widespread commercialization. The State's investment through CVRP – coupled with corresponding investments in vehicle charging and fueling infrastructure by the Energy Commission and federal government – is bringing more of these vehicles to California because manufacturers are choosing to focus early vehicle deployment in regions with the greatest local investments.



### Project Status

In the first two AQIP funding cycles, ARB has allocated a total of \$9.1 million for CVRP. The Energy Commission has also directed \$2 million of its AB 118 funding to CVRP to help meet the expected demand for ZEV rebates through the middle of 2011. This brings the two year funding total for CVRP to \$11.1 million which will provide rebates for about 2,000 full-function ZEVs.

CVRP offers vehicle rebates on a first-come, first-served basis for light-duty ZEVs, zero-emission motorcycles (ZEMs), and neighborhood electric vehicles (NEVs). About 20 different vehicle models are currently eligible. Additional vehicles are routinely added as manufacturers bring new models to market. CVRP is open to plug-in hybrid electric vehicles (PHEVs), and staff anticipates that eligible PHEV models will be added in the upcoming funding cycle. Rebate amounts range from \$1,500 for ZEMs and NEVs to \$5,000 for full functioning ZEVs.

*Cumulative Statistics:* Since the project's consumer launch in March 2010, rebates for nearly 1,400 vehicles totaling over \$7 million have been issued. About 90 percent of the rebates have been issued to individual consumers and the remainder to businesses, non-profit organizations, or government fleets. Rebate demand has rapidly risen since the start of the year as more eligible vehicles become commercially available, and staff expects existing CVRP funds to be fully expended by July 2011. Table II-5 presents a summary of rebates by vehicle type, and Table II-6 shows the regional distribution.

**Table II-5: Rebates Issued by Vehicle Type**

<b>Vehicle Type</b>	<b>Rebates Issued<sup>1</sup></b>	<b>Total Rebate Amount</b>
Light-Duty ZEVs	1,255	\$6,257,000
Commercial Zero Emission Trucks <sup>2</sup>	49	\$980,000
ZEMs	43	\$63,000
NEVs	35	\$47,000
<b>TOTAL</b>	<b>1,382</b>	<b>\$7,348,000</b>

<sup>1</sup> Through May 31, 2011.

<sup>2</sup> Commercial zero emission trucks were in CVRP until February 2011; now part of the HVIP.

**Table II-6: Regional Rebates Distribution**

<b>California Region</b>	<b>Number of Rebates Issued<sup>1</sup></b>
Bay Area	548
South Coast	416
San Diego	257
Sacramento Region <sup>2</sup>	45
Monterey	26
Ventura	25
San Joaquin Valley	18
Other	47
<b>TOTAL</b>	<b>1,382</b>

<sup>1</sup> Through May 31, 2011.

<sup>2</sup> Includes Sacramento, El Dorado, Placer, and Yolo/Solano Air Districts

*Implementation:* ARB has partnered with the non-profit California Center for Sustainable Energy (CCSE), selected via competitive solicitation in each of the last two funding years, to administer CVRP statewide. CCSE responsibilities include processing rebates, consumer outreach and education, project website development and maintenance, data reporting, and other duties associated with day-to-day implementation. ARB's responsibilities include program development and oversight, updating the Implementation Manual, evaluating and approving eligible vehicles, verifying consumer compliance with rebate terms, and contract management and administration. CVRP webpage, at <https://energycenter.org/>, provides a real-time accounting of rebate funds available to consumers, a downloadable rebate application and instructions, list of eligible vehicles, an online tutorial, and other project information.

*Year Two Refinements:* When FY 2010-11 CVRP funding became available in March 2011, ARB made several implementation refinements to clarify project requirements and improve project effectiveness. These include:

- *Provisions for Rental and Car Share Fleets:* These provisions allow rebates to rental and car share fleets that place eligible vehicles in California for a minimum of one year but less than three years for a reduced rebate amounts equaling 30 percent of a full rebate. ARB made this refinement because these fleets do not keep vehicles for three years as part for their normal business practice. ARB wanted to provide a mechanism for these fleets to participate in CVRP because they provide a unique opportunity to introduce many consumers to these advanced vehicles.
- *Maximum Rebates per Entity:* ARB set a cap at 20 CVRP rebates per entity in each calendar year with the exception of rental and car share fleets.
- *Waiting List:* These provisions establish a waiting list in the event FY 2010-11 funds are exhausted and new funds are not yet available. Rebates will be disbursed according to waiting list order, although ARB cannot guarantee funding until the Board approves next year's Funding Plan and the Legislature appropriates funding. All rebates for the waiting list are subject to the terms and conditions of FY 2011-12 CVRP, including revised rebate amounts.

#### Proposal for FY 2011-12

ARB staff proposes increasing CVRP funding allocation to \$15 million in response to rapidly growing consumer demand. ARB staff projects a large increase in the number of ZEVs and plug-in hybrids available for purchase in California over the next several years based on discussions with vehicle manufacturers and stakeholders representing diverse consumer and industry interests. Anticipated demand is between 2,000 and 6,000 vehicles in 2011, between 6,000 and 15,000 vehicles in 2012, and more than 15,000 vehicles in 2013.

In conjunction with tripling CVRP allocation relative to the last funding cycle, ARB staff is proposing to cut per vehicle rebate amounts roughly in half which would enable

CVRP to provide rebates for about 5,600 full-function ZEVs or PHEVs. Added to the existing CVRP funding, this would meet the mid-range demand projections through the middle of 2012. Staff's proposal is intended to stretch available funding, while providing substantial enough rebates to influence consumer choice and draw vehicles to California. Even with this significant increase in allocation, funding may be insufficient to meet demand at the high end of the projected range.

*Rebate Amounts:* ARB staff proposes a reduction in the maximum rebate amount from \$5,000 to \$2,500 for full-function ZEVs, with step-down reductions for other vehicle types. The new rebate amounts would apply to all wait-listed rebates from the previous funding year. Table II-7 summarizes rebate amounts for each eligible vehicle type under the full (36-month) ownership period, and reduced (minimum 12-month) ownership period allowed for car share and rental fleets.

**Table II-7: Proposed FY 2011-12 CVRP Rebate**

Vehicle Type	Current Rebate	Proposed Rebate	Proposed Rebate Under Reduced Ownership Option <sup>1</sup>
ZEV			
Type II, III, IV, or V (range $\geq 100$ miles)	\$5,000	\$2,500	\$750
Type I.5 (range $\geq 75$ , $< 100$ miles)	\$4,000	\$2,000	\$600
Type I (range $\geq 50$ , $< 75$ miles)	\$3,000	\$1,500	\$450
PHEV	\$3,000	\$1,500	\$450
NEV	\$1,500	\$900	\$270
ZEM			

<sup>1</sup> Option allows rebates for rental car companies and car share fleet that commit to own or lease vehicles in California for at least one year but less than three years at a reduced rebate amount.

In addition to the CVRP rebate, consumers are eligible for a federal tax credit of up to \$7,500 for a full functioning ZEV or PHEV. The proposed CVRP rebate amount combined with this tax credit would provide a total vehicle incentive of up to \$10,000 for consumers. Other incentives (such as financial assistance for home-charging infrastructure, investments in public infrastructure, savings in off-peak energy use, and access to carpool lanes) complement CVRP rebates, providing a comprehensive incentive package to encourage consumers to purchase these vehicles and demonstrating California's support for ZEV roll out. The revised rebate amount for the NEVs and ZEMs was not quite cut in half, reflecting: (1) staff's assessment that rebates below a certain monetary level no longer serve to influence potential buyers; and (2) the expiration of the federal tax credit for these vehicles at the end of 2011.

*Car Share Set-Aside:* Car sharing provides a reliable and flexible alternative to car ownership, particularly in urban settings where it is part of a larger public transportation network. Staff is proposing to set aside 10 percent (\$1.5 million) of CVRP funds for this purpose in recognition of this transportation model's benefits in reducing criteria pollutant and greenhouse gas emissions within the state. Staff would monitor the draw down throughout the fiscal year and remaining funds would roll back into the general CVRP account if unused.

*Rebate Cap:* Staff is proposing to continue the annual cap on the number of rebates a purchasing entity could claim. All fleets, except for rental and car share fleets, would be capped at 20 rebates per entity per year. Traditional rental car fleets would be capped at 50 vehicles per calendar year. Car share fleets would not be subject to a rebate cap, but rebated vehicles must be used exclusively for car share purposes, otherwise they would fall under a rebate cap.

#### Project Solicitation

Staff proposes to issue the FY 2011-12 CVRP Solicitation as soon as the State Budget is signed and the Board approves the Funding Plan. Staff hopes to have FY 2011-12 CVRP funds available to consumers before existing funding is exhausted. The same competitive process and eligibility requirements will be used from last funding cycle. The solicitation will be open to individuals, federal, state, and local government entities and agencies, and non-profit organizations with experience implementing a rebate program and general knowledge of statewide outreach and implementation. No major changes to the scoring criteria are proposed. Given the larger project funding amount compared to the previous two years, staff proposes reducing allowable costs for administration and outreach from 10 percent to 7 percent.

#### Future Funding Needs

Consumer demand for ZEVs and PHEVs is expected to increase by the tens of thousands in the next three years and beyond, as the hybrid and electric vehicle markets mature. As production volumes and model choices increase in the 2012 to 2014 timeframe, rebate demand will outstrip available AQIP funds. As noted earlier, ARB staff anticipates CVRP allocation in this proposed Funding Plan will meet demand through the middle of 2012. In developing next year's Funding Plan, ARB staff will need to evaluate how to structure CVRP to best continue supporting ZEV deployment and meet the ever growing projected demand. ARB will continue to seek partnering opportunities with other state and local agencies to augment vehicle incentive funding, and to promote both monetary and non-monetary incentives and infrastructure investments.

## Hybrid Truck and Bus Voucher Incentive Project (HVIP)

**Funding Target:** \$11 million

**Synopsis:** Consumer vouchers for ½ the incremental cost of a new hybrid truck. Zero emission trucks also eligible.



### Project Benefits:

- Spur early production volumes, lower long-term production cost.
- Reduce criteria pollutants, advance technology to meet long-term SIP commitments.
- Reduce CO<sub>2</sub> emissions, help meet AB 32 emission reduction targets.

### Funding Level

ARB staff proposes an \$11 million initial funding target for HVIP. This target assumes total AQIP project funding of \$28 million, a conservative estimate based on AQIP revenues over the past two years. If revenues are higher than this minimum level, HVIP funding would be scaled up to a maximum amount of \$16 million as outlined in the contingency provisions section.

### Overview

A hybrid-electric vehicle typically uses an electrical motor and a gasoline- or diesel-powered engine, which work in tandem to reduce emissions and fuel consumption. Hybrid vehicle technology reduces criteria pollutant, air toxic, and greenhouse gas emissions – particularly in urban delivery vehicles, refuse trucks, work trucks, buses, and other vehicles with high stop-and-go or idling duty cycles. Hybrid vehicles also provide significant fuel economy benefits and fuel cost savings to the fleet owner and therefore, have the potential to be self-sustaining with some reductions in the upfront vehicle cost. Large scale market penetration of hybrid trucks and buses will help California meet its long-term SIP and climate change goals.

The State's investment in HVIP at this time plays a critical role in accelerating early market penetration of hybrid technology with the goal of significant fleet penetration of these vehicles into California by 2020. Production capacity has substantial growth potential, but current low production volumes result in a \$30,000 to \$70,000 hybrid vehicle cost premium. ARB expects production costs to decline as hybrid driveline production volumes increase. When this occurs, the fuel economy payback period should shorten to the point where a hybrid truck purchase is economical without incentives and the technology is self-sustaining. ARB envisions the HVIP as a multi-year project to bridge this gap. At the federal level, the U.S. Environmental Protection Agency and the National Highway Traffic Safety Administration have proposed national

greenhouse gas and fuel efficiency standards for heavy-duty trucks for the first time, providing further impetus for investments in hybrid truck technology.

#### Project Status

*First Year Success:* HVIP is the nation's first program to directly reduce the up-front cost of a hybrid truck or bus, with fleets able to secure a voucher through their dealer as part of their vehicle purchase order. The voucher covers approximately half of the cost difference between a hybrid vehicle and a comparable, conventional diesel model. This streamlined approach – with eligible vehicles and preset voucher amounts available on a first-come, first-served basis – has proven popular with vehicle dealers, manufacturers, and California fleets. HVIP first launched with \$19.4 million in FY 2009-10 AQIP funds in February 2010. All available first year voucher funds were allocated to truck purchasers by August 2010, with a total of 667 vouchers issued at an average voucher amount of about \$29,000.

HVIP has garnered national recognition and was named as the nation's top emerging energy efficiency program by the American Council for Energy Efficient Economy. The success of ARB's program has led some local air districts to make corresponding investments in hybrid voucher programs following ARB's model. The South Coast AQMD is providing an additional \$1.4 million – implemented through HVIP – to help fleets purchase hybrid trucks and buses in the South Coast region. The Sacramento Metropolitan AQMD has started a \$500,000 program to fund hybrid trucks and buses using HVIP voucher amounts and vehicle eligibility list. These local investments further leverage the State's investment and will bring additional hybrid vehicles to California.

*Year Two Adjustments:* The Board approved an additional \$19 million for HVIP in the FY 2010-11 AQIP Funding Plan. ARB made modest changes to HVIP based on lessons learned in the project's first year. Voucher amounts were adjusted downward for the heaviest vehicles to reflect high first year demand and allow funding of more vehicles. Zero-emission commercial vehicles were shifted from CVRP to HVIP, and a new 8,501 to 10,000 pound (lb) weight class was added to allow for more effective funding of new promising technologies. Finally, \$2 million was set aside specifically for public fleets to address challenges they may have in procuring vouchers on a first-come, first-serve basis. The Year 2 HVIP launched in February 2011.

*Commercial Zero-Emission Vehicles:* ARB continues to coordinate with the Energy Commission on our respective AB 118 programs and jointly fund projects in cases where demand may exceed each agency's available resources. In May 2011, the Energy Commission directed \$4 million to HVIP to provide increased incentives for zero-emission truck purchases. These incentives will range from \$10,000 to \$30,000 (on top of existing HVIP voucher amounts) per vehicle, depending on gross vehicle weight. Zero-emission battery-electric vehicles that are manufactured or assembled in California will be eligible for an additional 20 percent bump-up on the Energy Commission incentive. ARB staff is working with the Energy Commission, HVIP Work Group, and other interested stakeholders to develop the necessary HVIP modifications to accommodate this new funding. In addition, ARB staff plans to write the FY 2011-12

HVIP grant solicitation and grant award with the flexibility to receive additional Energy Commission funding that may be directed to HVIP.

*Cumulative Statistics:* Since the program's first year launch in February 2010, California fleets have requested about \$21 million in vouchers to purchase over 700 hybrid trucks and buses. This represents over 10 percent of the hybrid trucks on the road nationwide, showing the direct impact HVIP is having. The high demand for vouchers thus far is likely due to willingness of California fleets to invest in these fuel-saving technologies as the up-front cost declines, as well as the relative simplicity of the voucher funding model. HVIP vouchers are now available for over 50 hybrid and zero-emission truck and bus vehicle makes and models from multiple truck and bus manufacturers. Table II-2 identifies vehicle HVIP vouchers issued thus far by vocation, and Table II-3 shows the regional distribution of hybrid and zero-emission truck vouchers.

**Table II-2: HVIP Vouchers by Vehicle Vocation**

<b>Vehicle Vocation</b>	<b>Number of Vouchers<sup>1</sup></b>	<b>Total Voucher Amount</b>	<b>Average Voucher Amount</b>
Beverage Delivery	320	\$11.1 M	\$34,600
Package Delivery	147	\$3.0 M	\$20,600
Uniform and Linen Delivery	108	\$2.7 M	\$25,100
Food Distribution	106	\$2.5 M	\$23,900
Other Truck	36	\$0.9 M	\$23,900
Liquid Propane Delivery	22	\$0.6 M	\$25,900
Urban or Shuttle Bus	9	\$0.3 M	\$37,800
<b>TOTAL</b>	<b>748</b>	<b>\$21.1 M</b>	<b>\$28,200</b>

<sup>1</sup>Through May 31, 2011.

**Table II-3: Regional Voucher Distribution**

<b>California Region</b>	<b>Number of Vouchers Issued<sup>1</sup></b>
South Coast	369
Bay Area	256
Sacramento Region	47
San Joaquin Valley	38
San Diego	25
Ventura	6
Other	7
<b>TOTAL</b>	<b>748</b>

<sup>1</sup>Through May 31, 2011.

*Implementation:* ARB partnered with Calstart, selected via competitive solicitation, to implement HVIP in both FY 2009-10 and FY 2010-11. Calstart leads day-to-day project implementation, while ARB has overarching responsibility for project development and oversight. Calstart's duties include training of vehicle dealers and fleets, development of HVIP website, processing of vouchers, and coordinating with and reporting to ARB. Over 95 percent of HVIP funds are for direct vehicle vouchers; with less than five percent going toward project administration. HVIP webpage, at

<http://www.californiahvip.org>, identifies remaining voucher funds, participating truck and bus dealerships, eligible vehicles, and other information.

#### Proposal for FY 2011-12

ARB staff proposes HVIP funding allocation be reduced to \$11 million because of the competing need for additional CVRP funds in FY 2011-12. This total would provide funding for about 500 new trucks which staff believes will adequately support the continuing deployment of hybrid technology into the California fleet. ARB staff proposes keeping the project's successful structure in place while providing an extra incentive to encourage additional California fleets to purchase hybrid trucks and buses for the first time. Staff's proposed modifications are also geared towards making limited project funding go further. These and other proposed modifications, described below, are based on lessons learned in HVIP's first two years.

*Vehicle Voucher Amounts:* Strong demand for HVIP vouchers thus far suggests existing voucher amounts are generating interest from California fleets to invest in hybrid trucks and buses. ARB staff proposes two updates to the vehicle voucher amounts as shown in Table II-4.

**Table II-4: Eligible Truck and Bus Voucher Amounts**

Gross Vehicle Weight in Pounds (lbs)		Base Vehicle Incentive <sup>1</sup>		
		1 to 30 vehicles <sup>2</sup>	31 to 65 vehicles	66 to 100 vehicles
8,501 – 10,000 lbs <sup>3</sup>	Plug-in Hybrid	\$10,000	\$8,000	\$6,000
	Zero-Emission	\$15,000	\$12,000	\$10,000
10,001 – 19,500 lbs <sup>4</sup>		\$15,000	\$12,000	\$10,000
19,501 – 33,000 lbs		\$20,000	\$15,000	\$12,000
33,001 – 38,000 lbs		\$25,000	\$20,000	\$15,000
> 38,000 lbs		\$30,000	\$25,000	\$20,000

<sup>1</sup> An ARB-certified hybrid vehicle above 14,000 lbs is eligible for an additional \$5,000 voucher. See School Buses section (below) for information regarding school bus voucher amounts.

<sup>2</sup> The first three HVIP-eligible vehicles purchased by a fleet are eligible for an additional \$10,000 voucher (or \$5,000 for vehicles 19,500 lbs and less).

<sup>3</sup> Only plug-in hybrid and zero-emission vehicles are eligible in this weight category.

<sup>4</sup> Zero-emission commercial vehicles in this weight class receive a \$20,000 voucher for the first 30 vehicles purchased by a fleet, \$15,000 for vehicles 31 through 65, and \$10,000 thereafter.

- *Scaled Voucher Amounts:* As in previous funding years, fleets would continue to be eligible to receive up to 100 vouchers in the FY 2011-12 HVIP. However, the voucher amount would decline by about 20 percent at the 30 and 65 voucher thresholds. Thus, fleets that have embraced hybrid technology and typically request many vouchers may continue to do so at slightly lower funding levels.
- *Additional \$10,000 for First Three Hybrid Vehicles:* To encourage fleets – particularly small fleets – to invest in hybrid technology, an additional \$10,000 incentive would be provided for the first three vouchers received by a fleet. (For vehicle weight classes 19,500 lbs and less, this extra incentive would be \$5,000



because the incremental cost is lower for these vehicles.) Staff hopes to draw more small fleets and early adopters into HVIP by further reducing the incremental cost for small purchases.

*School Buses:* Toxic emissions from diesel-fueled school buses are a serious public health concern, particularly for school age children who are more susceptible to their harmful health effects. School buses operate in close proximity to students and nearby neighborhoods. Because of these health concerns, California voters and the State Legislature have provided about \$300 million over the past decade for the Lower-Emission School Bus Program to clean-up the school bus fleet.

While public school districts may combine local Lower-Emission School Bus Program funds with HVIP voucher funds to pay for most of the cost of a new hybrid school bus, no HVIP vouchers for hybrid school buses have been requested as of May 2011. Because reducing emissions from school buses continues to be an ARB priority, ARB staff proposes increasing voucher amounts for HVIP-eligible hybrid public school buses by \$10,000 above the funding levels identified in Table II-4. This would enable HVIP to provide a \$20,000 base vehicle incentive for a 26,000 lb hybrid school bus, plus a \$10,000 school bus bump-up, and \$10,000 for the first three HVIP vouchers for a total \$40,000 voucher for the first three hybrid or electric school buses purchased by a public school district. If the Lower Emission School Bus Program provides \$140,000 towards the cost of a typical \$200,000 hybrid bus, the combined public funds provide 90 percent of the total bus cost. Other funding, such as federal or local air district funds, could be used to pay for the remaining cost.

*Hybrid Vehicle Manufacturer Diversity:* As of May 2011, 13 different vehicle manufacturers have vehicles on HVIP eligible vehicle list. The large number of participating manufacturers should help hybrid vehicle technology become sustainable more quickly. To ensure continuing diversity in the marketplace, ARB staff proposes setting a limit so no more than 50 percent of FY 2011-12 HVIP funding could be spent on any single manufacturer's vehicles. To date, voucher funding has been broadly distributed with no more than one-third of the vouchers going to any single manufacturer's vehicles, so staff does not envision this would limit any vehicle manufacturer's participation.

*Public Fleets:* Demand for HVIP vouchers has been largely driven by private fleets, with public agencies accounting for less than five percent of vouchers requested to date. Stakeholders from public agencies have indicated that budgetary challenges have deterred participation in HVIP. Others have indicated that public agencies may have difficulty accessing vouchers on a first-come, first-served basis given the procurement process requiring competitive bid, and the timing of when purchasing decision are made. To address this second issue, ARB set aside \$2 million in FY 2010-11 HVIP for public fleets for six months to encourage their program participation.

Over the next several months, ARB will evaluate the success of the public fleet set-aside. If it proves successful in bringing more public fleets into to HVIP, ARB will again

set aside up to 10 percent of FY 2011-12 HVIP funds for public fleets. Staff will work with HVIP Work Group to identify improvements to the public fleet set-aside as needed. ARB will also evaluate opportunities to leverage match funds from interested air districts or other entities to further buy-down public fleet vehicle costs.

#### Project Solicitation

ARB staff proposes to issue the FY 2011-12 HVIP Solicitation in fall 2011 and expects voucher funds will be available to vehicle purchasers in early 2012. Similar to last year, the solicitation will be open to individuals, federal, state, and local government entities and agencies, and organizations with California heavy-duty vehicle, vehicle incentive, or air quality experience. Solicitations will be evaluated using scoring criteria similar to last fiscal year, and the grantee will be responsible for outreach and implementation of HVIP statewide. Due to the decrease in total funding amount and increased complexity in project implementation, staff proposes increasing the maximum allowable costs for project administration and outreach to up to 8.5 percent of the project award.

## Advanced Technology Demonstration Projects



**Funding Target:** \$2 million

**Synopsis:** Demonstrate the viability of advanced technology vehicles, equipment or emission controls.

**Project Benefits:**

- Accelerate commercialization and deployment of cleaner technologies in the California marketplace.
- Support California's goals for criteria pollutant, air toxics, and greenhouse gas emission reductions.

### Funding Level

ARB staff proposes a \$2 million initial funding target for advanced technology demonstration projects. This target assumes total AQIP project funding of \$28 million, a conservative estimate based on AQIP revenues over the past two years. If revenues are higher than this minimum level, demonstration project funding would be scaled up to a maximum amount of \$3 million as outlined in the contingency provisions section.

### Overview

ARB's goal in funding demonstration projects under AQIP is to help accelerate the next generation of advanced technologies to reduce emissions from mobile sources. AQIP funding would be used to demonstrate the viability of new technologies with the potential for commercialization within three years of demonstration and the ability to gain significant market penetration. To date, ARB has focused its limited demonstration project funds in the off-road sector. This complements the Energy Commission's AB 118 advanced technology demonstration funds which has focused primarily on on-road vehicles.

### Current Project Status

For the FY 2009-10 funding cycle, ARB awarded funding for two projects to demonstrate advanced after-treatment on existing locomotives consistent with the priorities in its 2009 *Technical Options to Achieve Additional Emissions and Risk Reductions from California Locomotives and Railyards* report and a third project to demonstrate hybridization of an existing marine vessel. Implementation of these projects, described below, is ongoing.

- \$500,000 to the Sacramento Metropolitan AQMD to demonstrate a particulate filter on a locomotive that operates in regional service between Oakland and Roseville.

- \$350,000 to the Port of Los Angeles to demonstrate a particulate filter on a multiple engine switcher locomotive operating at an intermodal container transfer facility servicing the ports of Los Angeles and Long Beach.
- \$1 million to the Port of Long Beach to demonstrate the use of hybrid technology to reduce emissions from marine vessels by converting an existing diesel tugboat to operate with a diesel-electric hybrid engine.

For the FY 2010-11 funding cycle, ARB issued three separate solicitations for advanced technology demonstration projects for the marine, locomotive, and off-road equipment categories identified as priorities in the Funding Plan. In June 2011, ARB award a total of \$1.9 million in grant funding to the following projects:

- \$800,000 to the Bay Area AQMD for two separate locomotive projects to demonstrate Tier 4 emissions levels on genset locomotive switchers operating in the San Francisco Bay Area.
- \$439,000 to the South Coast AQMD to demonstrate an advanced emission reduction retrofit system on a tug boat operating at the ports of Los Angeles and Long Beach.
- \$261,000 to the Bay Area AQMD to demonstrate advanced emission reduction retrofits on marine engines operating on the San Francisco Bay.
- \$250,000 to the San Joaquin Valley Air Pollution Control District (APCD) to demonstrate cordless zero-emission commercial hedge trimmers and other lawn and garden equipment in non-residential applications.
- \$100,000 to the South Coast AQMD demonstrate cordless zero-emission lawn mowers and other lawn and garden equipment in a non-residential application.
- \$15,000 to the Mojave Desert AQMD to demonstrate cordless zero-emission commercial lawn and garden equipment in the Mojave Desert's extreme climate.

#### Proposed FY 2011-12 Demonstration Project Categories

ARB staff proposes at least three demonstration projects for FY 2011-12 funding cycle. Funding to demonstrate advanced emission controls for locomotives is proposed for the third consecutive year because reducing emissions and risk in and around railyards remains a priority for ARB. ARB staff also proposes a school bus demonstration project, another priority emission reduction category for ARB, and hybrid truck testing to complement HVIP.

- *Locomotives:* ARB staff is proposing up to \$1 million for locomotive demonstration projects. Eligible projects would be selected based on the priorities in ARB's 2009 *Technical Options to Achieve Additional Emissions and Risk Reductions from California Locomotives and Railyards*.

- *School Bus:* ARB staff is proposing up to \$1 million to demonstrate advanced hybrid technology in school buses. Staff had originally planned to fund this project in the FY 2010-11 funding cycle, but decided in consultation with school bus stakeholders to defer it to FY 2011-12. ARB staff will use the public work group process during the summer of 2011 to further define project parameters.
- *Hybrid Truck Testing:* To complement HVIP, ARB staff proposes allocating approximately \$500,000 for testing of hybrid heavy-duty trucks to the U.S. Department of Energy National Renewable Energy Laboratory (NREL). The testing would consist of data logging hybrid vehicles in order to improve duty cycle classifications and characterization. The testing may also include complementary emissions testing of both hybrid and conventional vehicles. If possible, most of the testing would be done on HVIP funded vehicles on a voluntary basis. This testing would support ARB's investment in hybrid trucks through HVIP and updates to ARB's heavy-duty hybrid test procedures.

As a federal government lab, NREL has proven programs for collecting and analyzing emissions reductions and fuel savings data from heavy-duty hybrid vehicles and working with a wide range of industry representatives to interpret those data. For this reason, ARB staff believes NREL is uniquely qualified to perform this work and proposes to contract with NREL for the hybrid testing. Directing AQIP funding into this established effort would leverage ARB's limited resources to the maximum extent. This testing is intended to fill in data gaps not duplicate other efforts, so ARB would closely coordinate with other ongoing programs such as Calstart's Hybrid Truck Users Forum and the California Hybrid, Efficient and Advanced Truck Research Center (CalHEAT) funded by the Energy Commission.

If additional demonstration project funding becomes available, ARB staff proposes to have the option of funding additional demonstration projects based on guiding principles, Board priorities, and needs identified from existing demonstrations. Additional projects would be vetted through AQIP Demonstration Project Working Group.

#### Project Solicitation

As in the two previous funding cycles, ARB staff proposes that grant solicitations for demonstration projects be open to local air districts and other public agencies. Public entities are encouraged to partner with one or more technology demonstrators and end users in their regions. At least 50 percent of each demonstration project's funds must be provided from a non-AQIP source, and at least 10 percent of this non-AQIP match must be in cash with the remainder allowed as in-kind contribution. The requirement of match funding leverages AQIP funds while encouraging grantees to be invested in successful completion of the projects. Up to 10 percent of the total project budget would be available for project administration consistent with previous funding cycles.

## **C. Other AQIP Project Categories**

Last year's Funding Plan included three additional project categories: zero-emission agricultural utility terrain vehicle rebates, lawn and garden equipment replacement, and an off-road hybrid equipment pilot. A status update for these projects is provided below.

### **1. Agricultural Utility Terrain Vehicle Rebate Project**

AQIP provides up to \$1.1 million in rebates for purchases of new, zero-emission utility terrain vehicles used in the agricultural industry with funds appropriated in FY 2009-10. This is a first step in bringing advanced technology equipment into the agricultural sector. ARB has partnered with the San Joaquin Valley APCD, selected via competitive solicitation, to implement this statewide project. The project launched in April 2010. Only vehicles used in the agricultural industry are eligible for funding; recreational vehicles are not eligible.

As of May 31, 2011, 34 rebates have been issued accounting for about 10 percent of the available funding. Demand has been slower than ARB anticipated despite a mid-course adjustment to per vehicle rebate amounts. Infrastructure requirements, battery range and recharge time, combined with unfamiliar technology, higher purchase costs, and the downturn in the economy are likely contributing factors. Because project funding is still available to meet expected demand over the next year, no additional AQIP funding is proposed in this Funding Plan. ARB will continue to closely monitor progress of this project.

By statute, project funds appropriated in FY 2009-10 must be expended by June 30, 2012. If at least 60 percent of the Agricultural Utility Terrain Vehicle Rebate Project funds are not spent by January 1, 2012, the remaining funds will be reallocated under ARB's FY 2011-12 AQIP budget authority. ARB staff proposes that these funds be directed to CVRP or HVIP. Staff would evaluate the demand for funding in CVRP and HVIP at the time additional funding becomes available and direct the funds where there is the greatest need.

### **2. Lawn and Garden Equipment Replacement (LGER) Project**

Over the past two funding cycles, AQIP provided a total of \$2.6 million in funding for rebates to consumers who scrap old gasoline powered lawn mowers and replace them with zero-emission models. AQIP funds expand local air districts' lawn mower replacement programs. These district programs have been popular with consumers and successful in reducing emissions. To date, over 12,000 lawn mower replacements have been funded via AQIP. For future years, ARB staff is shifting zero-emission lawn mower replacement projects from AQIP to the Carl Moyer Program in part based on the success of AQIP LGER project. The Board approved this change in April 2011 as part of the 2011 revisions to the Carl Moyer Guidelines. Because it is now a Moyer-eligible category, no additional AQIP funding for consumer LGER rebates is proposed consistent with the Board-approved guiding principles for AQIP.

ARB is still interested in using AQIP to support the expansion of zero-emission technology from residential equipment to the commercial sector. Accordingly, ARB awarded \$365,000 in grant funding to demonstrate advanced zero-emission commercial lawn and garden equipment utilizing FY 2010-11 AQIP funds.

### **3. Off-Road Hybrid Equipment Pilot Project**

In March 2011, ARB released a \$2 million competitive grant solicitation for a hybrid off-road construction equipment pilot project to encourage development and deployment of hybrid off-road construction equipment in California. In June 2011, the University of California Riverside College of Engineering-Center for Environmental Research and Technology was selected as the grantee to implement this project, and the project will kick off in July 2011. With the success of HVIP for on-road trucks, ARB is interested in extending AQIP hybrid funding to off-road equipment. This pilot project will help ARB evaluate emission benefits of this technology as typically operated in California. Because the pilot project is just starting, no additional AQIP funding is proposed in this Funding Plan. Next year, ARB will use data from this project to evaluate future funding for hybrid off-road equipment. If the pilot is successful, ARB will consider a more comprehensive off-road equipment hybrid voucher project to encourage broader use of this equipment.

### **D. Contingency Plans**

The proposed Funding Plan is based upon the latest available information. However, circumstances may change between the time the Board approves the plan and the time project solicitations are issued or project funds awarded. This section describes staff's proposed contingency plans should mid-course corrections be needed to ensure that AQIP funds are spent expeditiously and efficiently. Under these provisions, the Board would grant the Executive Officer authority to make the necessary mid-course adjustments to address the cases described below.

Over the past two funding cycles, revenues in the Air Quality Improvement Fund have been nearly 30 percent lower than the amount appropriated in the State budget, so ARB had to scale back its AQIP project funding accordingly. As a result, ARB has awarded about \$29 million in grants each year rather than the \$40 million annual total included in each of the Board-approved Funding Plans. Based on this experience, ARB staff is proposing contingency provisions in the event revenues in FY 2011-12 are lower than the Budget appropriation.

The proposed Funding Plan includes a total AQIP project funding total of \$40 million based on the Governor's proposed Budget. However, ARB is also establishing minimum allocations for each project category based on a \$28 million revenue total. The \$28 million total is a conservative estimate based on the revenues over the past two years. These allocations are presented in Table II-8.

**Table II-8. Contingency Plan for Addressing Reduced Revenues**

<b>Project Category</b>	<b>Minimum Allocation<sup>1</sup> (\$millions)</b>	<b>Allocation Based on \$40 Million Budget<sup>2</sup> (\$millions)</b>
Hybrid Truck and Bus Voucher Incentive Project	11	16
Clean Vehicle Rebate Project	15	21
Advanced Technology Demonstration Projects	2	3
<b>TOTAL</b>	<b>28</b>	<b>40</b>

<sup>1</sup> Based on a conservative estimate of \$28 million in revenues for AQIP projects.

<sup>2</sup> Based on Governor's proposed Budget; will be updated if final State Budget appropriation is different.

Establishing minimum targets for each category based on a conservative funding scenario reduces the risk of over-obligating funds beyond available revenues, and avoids disproportionately affecting projects that start later in the fiscal year if revenue projections are lowered. If revenues come in between the \$28 million minimum allocation and the \$40 million appropriated amount, funding for each project category would be scaled according to the targets in Table II-8 and an updated assessment of demand for funding in each project category. ARB staff plans to release initial grant solicitations based on the minimum allocations in Table II-8. However, the solicitations and grant agreements will be written with provisions to increase the awarded funding if there are sufficient revenues.

The proposed Funding Plan specifies all policy-related details regarding the projects to be funded. However, technical or administrative changes in implementation procedures may be needed from time to time to ensure these projects are successful. Staff proposes a transparent process in which minor changes to a project category would be publicly vetted through the public AQIP work groups that have been established to discuss the implementation details of each project. These changes would be within the Funding Plan parameters approved by the Board. Any allocation adjustments outside those specifically prescribed in the proposed Funding Plan would require Board approval.

#### **E. FY 2011-12 Project Solicitations**

Following Board approval of the proposed FY 2011-12 Funding Plan and after the final State Budget is signed, staff will release solicitations for each of the project categories in order to select a grantee to implement the projects in FY 2011-12. The solicitations will include all the programmatic details potential grantees need to apply for funds, in addition to the criteria upon which the applications will be evaluated and scored.

In accordance with AQIP Guidelines, ARB will begin issuing project solicitations no later than 90 days after the funds are appropriated in the State Budget and the Board approves the Funding Plan. The public work groups established for each project category will continue to be the primary avenue for seeking input and feedback on solicitations and implementation manuals. Staff will monitor and evaluate AQIP projects over the course of the fiscal year and share project data with the work groups.



### III. References

In developing the proposed Funding Plan, ARB staff relied on information from previous Board approved AQIP Funding Plans, AQIP Guidelines, and the Energy Commission's AB 118 Investment Plans . Links to this reference material are listed below:

Air Resources Board. Staff Report: Initial Statement of Reasons for Proposed Rulemaking, Proposed AB 118 Air Quality Guidelines for the Air Quality Improvement Program and the Alternative and Renewable Fuel and Vehicle Technology Program, Released August 8, 2008.

<http://www.arb.ca.gov/regact/2008/aqipfuels08/aqipfuels08.htm>

Air Resources Board. Staff Report: Initial Statement of Reasons for Proposed Rulemaking, Proposed AB 118 Air Quality Improvement Guidelines, Released March 6, 2009. <http://www.arb.ca.gov/regact/2009/aqip09/aqip09.htm>

Air Resources Board. Technical Options to Achieve Additional Emissions and Risk Reductions from California Locomotives and Railyards. August 2009.

<http://www.arb.ca.gov/railyard/ted/ted.htm>

Air Resources Board. Proposed AB 118 Air Quality Improvement Program Funding Plan For Fiscal Year 2009-10. Approved April 24, 2009.

[http://www.arb.ca.gov/msprog/aqip/fundplan/aqip\\_FY09-10\\_approved.pdf](http://www.arb.ca.gov/msprog/aqip/fundplan/aqip_FY09-10_approved.pdf)

[http://www.arb.ca.gov/msprog/aqip/fundplan/aqip\\_FY09-10\\_FP\\_appendix.pdf](http://www.arb.ca.gov/msprog/aqip/fundplan/aqip_FY09-10_FP_appendix.pdf)

Air Resources Board. Proposed AB 118 Air Quality Improvement Program Funding Plan For Fiscal Year 2010-11. Approved June 24, 2010.

[http://www.arb.ca.gov/msprog/aqip/fundplan/AQIP\\_FP\\_JUNE%202010-FINAL.pdf](http://www.arb.ca.gov/msprog/aqip/fundplan/AQIP_FP_JUNE%202010-FINAL.pdf)

Air Resources Board. 2011 Biennial Report to the Legislature on AB 118 Air Quality Improvement Program. January 11, 2011.

[http://www.arb.ca.gov/msprog/aqip/leg\\_reports.htm](http://www.arb.ca.gov/msprog/aqip/leg_reports.htm)

California Energy Commission. Investment Plan for the Alternative and Renewable Fuel and Vehicle Technology Program, Commission Report. Publication # CEC-600-2009-008-CMF, April 2009.

<http://www.energy.ca.gov/2009publications/CEC-600-2009-008/CEC-600-2009-008-CMF.PDF>

California Energy Commission. 2010-2011 Investment Plan for the Alternative and Renewable Fuel and Vehicle Technology Program, Commission Report. Publication # CEC-600-2010-001-CMF, August 2010.

<http://www.energy.ca.gov/2010publications/CEC-600-2010-001/CEC-600-2010-001-CMF.PDF>

California Energy Commission. 2011-2012 Investment Plan for the Alternative and Renewable Fuel and Vehicle Technology Program, Committee Draft Report. Publication # CEC-600-2011-006-CTD, May 2011.

<http://www.energy.ca.gov/2011publications/CEC-600-2011-006/CEC-600-2011-006-CTD.pdf>